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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/722,756

11/26/2003

Arun Prakash

PD-03-0415

7205

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04/05/2007

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EXAMINER

BEHNCKE, CHRISTINE M

ART UNIT

PAPER NUMBER

3661

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/722,756

Applicant(s)

PRAKASH ET AL.

Examiner

Christine M. Behncke

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-14, 16-25, and 27-33 is/are rejected.
- 7) ☒ Claim(s) 4, 15 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the Remarks filed 11 January 2007, in which claims 1-33 were presented for examination.

Response to Arguments

2. Applicant's arguments, see Remarks, filed 11 January 2007, with respect to claims rejected as anticipated by the reference Basuthakur have been fully considered and are persuasive. The rejection of claims 1, 2, 12, 13, 23, and 24 under Basuthakur has been withdrawn.

Applicant's arguments filed 11 January 2007 have been fully considered but they are not persuasive. Applicant contends the applied Kazimi reference is cumbersome to implement and is subject to frequency sensitivities and uncertainties and requires the computations to be performed on the ground and later up-linked to be implemented. While the Examiner does not disagree with Applicant's opinion about the deficiencies of the Kazimi invention, Applicant's arguments are not persuasive because the explicit solutions of these deficiencies are not explicitly claimed. The claim language of providing a second step command at the transient zero-crossing time of a dynamic response to a first step command is still anticipated by Applicant's acknowledged prior art.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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3. Claims 1, 3, 5-8, 11, 12, 14, 16-19, 22, 23, 25, 27-30 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Kazimi et al., US 6,311,929.

(Claims 1, 12, and 23) Kazimi et al. discloses a method, an apparatus and means for controlling a plurality of solar panels coupled to a spacecraft (column 1, lines 13-28), comprising the steps of: providing a first step command to a first solar panel (column 3, lines 33-52); and providing a second step command to a second solar panel at a time of a transient zero-crossing of a dynamic response of the spacecraft body to the first step command (column 3, line 33-column 4, line 3 and Figure 2); wherein the second solar panel is disposed on an opposite side of the spacecraft from the first solar panel (Figure 1, column 3, lines 33-45).

(Claims 2, 13, and 24) Kazimi et al. further discloses wherein the first solar panel and the second solar panel are rotatable about a longitudinal axis (Figure 1), and at least one of the first solar panel and the second solar panel are tilted away from a spacecraft body pitch axis (column 4, lines 34-52).

(Claims 3, 14, and 25) Kazimi et al. further discloses wherein: the step of providing a first step to the first solar panel comprises the steps of: computing a first solar panel command (column 1, line 62-column 2, lines 4); providing the computed first solar panel command to a first solar panel driver (column 2, lines 29-31), the step of providing a second step command to a second solar panel at a time of a transient zero-crossing of a dynamic response of the spacecraft body to the first step command comprises the steps of: computing a second solar panel command (column 2, lines 41-50); biasing the computed second solar panel command by a transient cancellation

bias (column 4, lines 14-33); providing the biased second solar panel command to a second solar panel driver (column 2, lines 30-33).

(Claims 5, 6, 16, 17, 27, and 28) Kazimi et al. further discloses wherein the transient cancellation bias is determined by terrestrially-based processors simulating/testing the dynamic response of the spacecraft body to the first step command (column 2, lines 35-40).

(Claims 7, 8, 18, 19, 29, and 30) Kazimi et al. further discloses wherein the transient cancellation bias is estimated by testing of the dynamic response of the spacecraft body by a spacecraft processor (column 2, lines 35-40, line 66-column 3, line 8).

(Claims 11, 22, and 33) Kazimi et al. further discloses wherein: the step of providing a first step to the first solar panel comprises the steps of: computing a first solar panel bias command (column 4, lines 34-65); computing the first step command at least in part from the first solar panel bias command (Figure 3 and column 4, lines 34-65); providing the first step command to a first solar panel driver (column 3, lines 33-52), the step of providing a second step command to a second solar panel at a time of a transient zero-crossing of a dynamic response of the spacecraft body to the first step command comprises the steps of: computing a second solar panel bias command (column 4, lines 34-65); computing the second step command at least in part from the second solar panel bias command (column 2, lines 41-50); providing the computed second solar panel bias command to the solar panel driver, and biasing a second solar panel position by a transient cancellation bias (column 4, lines 14-33 and lines 34-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 9, 10, 20, 21, 31 and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazimi et al., in view of Bizjak, US 2003/0098805.

Kazimi et al. describes the step of providing a first step to the first solar panel further comprises the step of quantizing the first solar panel bias command (figure 3, column 4, lines 14-23); the step of biasing the computed second solar panel command by a transient cancellation bias comprises quantizing the second solar panel bias command (figure 3, column 4, lines 14-23) and creating a delay to the signal (column 4, lines 14-33 and lines 34-65). Kazimi et al. does not disclose computing the bias command at least in part from the sum of the quantized panel command and the transient bias. However, Bizjak teaches it was well known in the control art at the time of the invention to use an integration circuit to create a delay/bias in a signal ([0459]). It would have been obvious to one of ordinary skill in the art to use a delay integration circuit to create the panel bias, as it is a well known and simple control method. Further it would have been obvious to one of ordinary skill in the control and computer art to quantize to a least significant bit equal to a step size and to a value of a nearest step to control a commonly used stepper motor in a satellite.

Allowable Subject Matter

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5. **Claims 4, 15, and 26** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

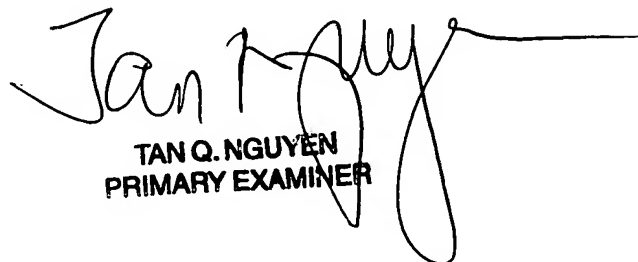
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine M. Behncke whose telephone number is (571) 272-8103. The examiner can normally be reached on 8:30 am- 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CMB


TAN Q. NGUYEN
PRIMARY EXAMINER